

of the forgoing claims 1-3, 6, 7 and 11-13 remain pending for reconsideration which is requested. No new matter has been added. The Examiner's rejections are traversed below.

Page 2 of the Office Action rejects claims 1-3, 6-7 and 11-13 under 35 U.S.C. § 103 over Kuhara and Yoshida.

In the Office Action the Examiner in applying the prior art noted that the claims did not specify that the first and second holes which have axes that are offset were in the same or separate members and applied the Yoshida reference which the Examiner notes has holes in a sleeve and a holder that have offset axes. Claims 1 and 6 have been amended to clarify that the invention has a laser diode assembly that includes a holder with an axis ("a holder axis") and a sleeve that has an axis ("a sleeve axis"). The invention also has a lens fiber assembly that includes a casing and a ferrule. In particular, the casing has two holes ("first casing hole" and "second casing hole") where the casing holes each have an axis ("a first casing hole axis" and "a second casing hole axis") and the axes are offset ("a second casing hole axis offset from said first casing hole axis"). (See similar hole offset language in claim 11) Thus, the claims make clear that the same member, the casing, (as opposed to the sleeve or holder) has two holes with axes that are offset. The Examiner acknowledged that Kuhara does not teach such casing holes with offset axes. As previously noted, the Examiner acknowledges that Yoshida has a holder with an axis and a sleeve with another axis that is offset. The prior art does not teach or suggest a casing with hose axes that are offset. As noted previously the present invention has assembly and maintenance advantages over the prior art.

In addition, the casing holes of the present invention have different diameters ("a second casing hole diameter smaller than said first casing hole diameter" see claims 1 and 6). This feature of the present invention is also is not suggested by the prior art and provides advantages over the prior art.

It is submitted that the invention of independent claims distinguishes over the prior art and withdrawal of the rejection is requested.

The dependent claims depend from the above-discussed independent claims and are patentable over the prior art for the reasons discussed above. The dependent claims also recite additional features not taught or suggested by the prior art. For example, claims 3 and 13 emphasize that the casing has a third hole with a pin for closing the hole. The Examiner acknowledges that such a third hole is not taught by the prior art. The Examiner then argues that it would have been obvious to have such a hole for the cooling of the laser diode. Contrary

to the Examiner's assertion, the hole is not for cooling the laser diode but for allowing ambient air into the space between the lens and the ferrule ("between said lens and said ferrule"). The diode is on the opposite side of the lens from the third hole (see figures 1 and 2). Claim 12 emphasizes the formation of a guide rail and a groove for the second casting hole and the ferrule. Nothing in then prior art teaches or suggests this. It is submitted that even with the hindsight based conclusion asserted by the Examiner, there is no suggestion of a third hole communicating with the space between the lens and the ferrule. It is submitted that the dependent claims are independently patentable over the prior art.

It is further submitted that the claims are not taught, disclosed or suggested by the prior art. The claims are therefore in a condition suitable for allowance. An early Notice of Allowance is requested.

If any further fees, other than and except for the issue fee, are necessary with respect to this paper, the U.S.P.T.O. is requested to obtain the same from deposit account number 19-3935.

Respectfully submitted,

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VERSION WITH MARKINGS TO SHOW CHANGES MADE

IN THE CLAIMS:

Please AMEND the following claims:

1. (Amended) A laser diode module, comprising:

a laser diode assembly including a base, a carrier fixed to said base, a laser diode mounted on said carrier, a cap fixed to said base so as to surround said laser diode, and a holder fixed to said base so as to surround said cap and having a holder axis;

a lens-fiber assembly including a casing having a first casing end, a second casing end, a first casing hole having a first casing hole diameter and a first casing hole axis, and a second casing hole having a second casing hole diameter smaller than said first casing hole diameter and a second casing hole axis offset from said first casing hole axis, said second casing hole communicating with said first casing hole, a lens inserted and fixed in said first casing hole from said first casing end of said casing, and a ferrule with an optical fiber embedded therein, said ferrule having a slant polished first ferrule end and a second ferrule end, said ferrule being inserted and fixed in said second casing hole from said second casing end of said casing so that a given distance is defined between said first ferrule end of said ferrule and said lens and that said second ferrule end of said ferrule projects from said second casing end of said casing; and

a sleeve having a first sleeve end fixed to said holder and a second sleeve end to which said first casing end of said casing is fixedly inserted and having a sleeve axis;

said first end of said ferrule being positioned so that a portion of said first ferrule end of said ferrule radially farthest from said first casing hole axis of said first casing hole becomes axially farthest from said lens.

2. (Amended) A laser diode module according to claim 1, wherein the slant angle of said first ferrule end of said ferrule is set in the range of about 4° to about 8° with respect to a plane perpendicular to [the] an axis of said ferrule.

3. (Amended) A laser diode module according to claim 1, wherein said casing further has a third casing hole for making communication of said first and second casing holes between said lens and said ferrule with the ambient air, and a pin for closing said third casing hole.

6. (Amended) A laser diode module₁ comprising:

a laser diode assembly including a base, a carrier fixed to said base, a laser diode mounted on said carrier, a cap fixed to said base so as to surround said laser diode, and a holder fixed to said base so as to surround said cap and having a holder axis; and

a lens-fiber assembly including a casing having a first casing end, a second casing end, a first casing hole having a first casing hole diameter and a first casing hole axis, and a second casing hole having a second casing hole diameter smaller than said first casing hole diameter and a second casing hole axis offset from said first casing hole axis, said second casing hole communicating with said first casing hole, a lens inserted and fixed in said first casing hole from said first casing end of said casing, and a ferrule with an optical fiber embedded therein, said ferrule having a slant polished first ferrule end and a second ferrule end, said ferrule being inserted and fixed in said second casing hole from said second casing end of said casing so that a given distance is defined between said first ferrule end of said ferrule and said lens and that said second ferrule end of said ferrule projects from said second casing end of said casing;

said first casing end of said casing being fixed to said holder;

said first ferrule end of said ferrule being positioned so that a portion of said first ferrule end of said ferrule radially farthest from said first casing hole axis of said first casing hole becomes axially farthest from said lens.

7. (Amended) A laser diode module according to claim 6, wherein the slant angle of said first ferrule end of said ferrule is set in the range of about 4° to about 8° with respect to plane perpendicular to [the] an axis of said ferrule.

11. (Amended) A laser diode module₁ comprising:

a laser diode; and

a lens-fiber assembly including a casing having a first casing hole and a second casing hole offset from said first casing hole, a lens fixed in said first casing hole, and an optical fiber provided in said second casing hole, said lens-fiber assembly guiding a laser beam emitted from said laser diode through said lens to said optical fiber;

said optical fiber being inserted and fixed in a ferrule press-fitted with said second casing hole.

12. (Amended) A laser diode module according to claim 11, wherein:

said ferrule has a first ferrule end inserted in said second casing hole and a second ferrule end projecting from said second casing hole, said first ferrule end of said ferrule being inclined a given angle with respect to [the] an axial direction of said ferrule; and

one of the outer circumferential surface of said ferrule and [the] a wall surface of said casing defining said second casing hole is formed with an axially extending guide rail, and the other is formed with an axially extending groove adapted to engage said guide rail.

13. (Amended) A laser diode module according to claim 11, wherein said casing further has a third casing hole for making communication of said first and second casing holes between said lens and said ferrule with the ambient air.